

Psychogenic pruritus

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ABSTRACT

Perceived as an itching, ranging in intensity from one person to another, pruritus is a frequent symptoms of dermatological diseases. Pruritus may be considered a functional disorder in which the psychogenic factors play an important role in its onset. Skin diseases are significantly conditioned by stress and emotions, those influences on the skin being mediated by the nervous system including the autonomic, immune or hormonal system. The diagnosis of psychogenic pruritus is determined after eliminating any other causes of pruritus, so it is a diagnosis of exclusion. The quality of life to a patient with psychogenic pruritus is influenced in a negative way just because of the impact created by its awareness of his skin symptoms, expressed by itching, scratching lesions, sometimes quite severe marks. There is no specific treatment in such situations. The optimal treatment is the etiologic one, by eliminating as much as possible the triggering factors/condition.

KEYWORDS

functional disorder, itch, neuropeptide, interleukin

OVERVIEW

Although it is one of the most frequent symptoms of dermatological diseases, pruritus often triggers difficulties regarding the therapeutic cures or its belonging to a particular pathology, as it is the clinical expression of internal suffering, apart from the psychical one, situation in which we deal with *psychogenic pruritus*.

In the psychiatric literature, it is included in the category of *somatoform disorders*, which refers to skin conditions that are not fully explained by a known dermatologic disease; the members of the French society of psycho- dermatology prefer the functional disorder terminology, avoiding the phrase “psychogenic pruritus”, precisely because of the various interpretative possibilities that would negatively affect the quality of life in patients with such disorders.

Pruritus is perceived as an itching, ranging in intensity from one person to another, from a simple to a painful irritation that dominates the behavior in the case of individuals with psychiatric disorders such as depression, anxiety, psychoneurosis, etc. Somatoform itching is part of a family of functional

mucocutaneous skin disorders with psychogenic pain, paresthesia, vulvodynia, stomatodynia, glossodynia. (1)

In women, the vulva and the perianal itching are recognized as manifestations of psychogenic pruritus and are sometimes caused by stress, although this cause is probably overrated, because there first should be excluded the occult reversible causes such as oxyuriasis, drug dermatitis, candidiasis, neoplasia, nocturnal pruritus outbreaks accompanied by itching and sweating, often leading to anxiety. Such episodes of pruritus have been reported in people who are waiting for a transplant. It is obvious that patients who experience severe persistent pruritus, become depressed, and this reduces the threshold of itching, completing a vicious circle of pruritus, depression and even more intense itching. (2)

The members of the French society of psycho- dermatology define pruritus as an itch, a functional disorder, in which the psychogenic factors play an important role in its onset. This requires 10 diagnostic criteria, three of which are mandatory and seven are optional (Table 1).

Mandatory diagnostic criteria	Optional criteria
• localized or generalized self-contained pruritus (without primary skin lesion)	• chronological relationship regarding the occurrence of itching, with one or more events with psychological repercussions
• chronic pruritus (more than 6 weeks)	• changes associated with stress
• without a somatic cause	• nycthemeral variations
	• predominance while at rest or in activity

Mandatory diagnostic criteria	Optional criteria
	• psychological distress
	• pruritus that could be improved by psychotherapy
	• pruritus that could be improved by psychotropic drugs

Table 1: Diagnosis criteria of functional disorder-Acta Derm. Venerol (3).

The correlation between cutaneous symptoms and brain impulses

Approximately 30 % of the patients with skin diseases were reported to have mental disorders and psychosocial disparities (Kesler et Al., 2005). The prevalence of mental disorders among these patients is 25 – 30 %, with higher rates in patients with acne, itching rashes, alopecia and herpes simplex (Picardi, Abena, Melchor, Puddu and Pasquini, 2000). (4)

It is known that the skin, as well as the brain, has the same embryological origin – the neuroectoderm, while the pruritus can be considered the element that determines the complex but complicated relationship between the two organs.

The skin is the most “psyched” sensory organ because, at this level reactions which are mediated by the neurovegetative system occur, while the pathological mental states and processes are properly conceived. In the skin-psyche correlation, the NICE model is asserted (neuro-immuno-cutaneous-endocrine network), consisting of four systems interconnected through a common substrate of neuropeptides, cytokines, glucocorticoids and other effector molecules. The combination between the nervous system and skin diseases is reflected by the exacerbation of pruritic skin lesions of psoriasis, acne, hives, eczema and many more, after stressful events (5).

In recent years, the brain areas responsible for itching have been elucidated. The cingulate cortex in particular appears to be an important area of the brain involved in processing the sensation of itching. The cingulate cortex is activated significantly in patients with atopic dermatitis after the administration of histamine and its activation is correlated with the severity of the disease. The deactivations of the cingulate cortex after excoriation in healthy subjects was also determined. The anterior cingulate cortex is involved in the modulation of emotional and cognitive activity and it can provide a physiological ground on how the mood and motivation can influence the perception and processing of itching. (6)

Skin diseases are significantly influenced by stress and emotions. The great dermatologist and psychiatrist Griesemer studied the effect of emotions on dermatological disorders (pruritus, rosacea, lichen planus, atopic dermatitis, alopecia areata, seborrheic dermatitis, etc.), showing that the influences of stress and emotions on the skin are mediated by the nervous system, including the autonomic , immune or hormonal system. Also, stress can cause or enhance anxiety disorders or depression in susceptible persons. (4)

Fjellner and Arnetz have studied the psychological anticipatory factors during emotional stress. The exposure of healthy volunteers to mental stress activates the psychoneuroendocrin system without other

skin conditions, sensitive to intradermal injections of histamine. The differences between subjects were obvious and partially related to the urinary level of epinephrine. Epinephrine seems to have had a suppressive effect on itching and enhanced the effects in response to the light signal. The pulse rate was positively correlated with the intensity of the light signal response. During the test, the subjects relaxed themselves by listening to music and, after that, they were exposed to mental stress, a test being given to them with words written in bold and they were urged to solve arithmetic problems for 50 minutes, while the changes in the pulse rate or systolic and diastolic blood pressure were being monitored. The tests were followed by other 40 minutes of relaxation. The results confirmed that pruritus is influenced by subjective psychological stress, although there were great individual variations. Many of the various psycho-biological mechanisms, in which the skin diseases became chronic, seem to be strongly associated with psychological and behavioral influences. (7)

Mechanisms involved in psychogenic pruritus

The itching sensation, described above, is induced by the stimulation of loose nerve endings in the superficial layers of the skin, the sensory apparatus being located on the dermo-epidermal junction and the fibers that transmit this sensibility belong to the spino-thalamic lateral tissue (type C demyelinated fibers). This is accompanied by activation of the anterior cortex and predominantly ipsilateral activation of additional areas of movement and the inferior parietal lobe, followed by excoriation, which reflects the fact that “the one that itches is the brain, not the skin” (8). Itching can be caused by a number of physical stimuli-changes in temperature, superficial touches, chemical- histamine, kinin, opioid peptides,

vasoactive intestinal polypeptide (VIP), serotonin, prostaglandin F₁, but also emotional factors. The autonomic nervous system plays a secondary role in the mechanism of pruritus, fact demonstrated by the observation that patients that underwent sympathectomies have a normal sensitivity to pruritic stimuli. (9)

An important element for conveying the sensation of itching is neurokinin-1, receptor found in the cutaneous nerves and in the neurons of the posterior horn, as recently shown in rats, indicating that neurokinin/neuropeptide P can play the role of the spinal transmitter of the itching. (10)

Classic inflammatory mediators, such as bradykinin, serotonin, and acidic pH, sensitize the nociceptors. Acute sensitization can be achieved through mediators of inflammatory cells, such as interleukins, but their acute effects can not account for the long lasting changes of neuronal sensitivity observed in inflammatory processes. Usually, gene expression induced by trophic factors, for example, the neuronal growth factor (NGF) has been shown to play a major role, constantly increasing the neuronal sensitivity. NGF is released into the periphery, it specifically attaches to the TrkA receptors on nociceptive nerve endings and, through a retrograde axonal path, it reaches the dorsal root ganglion, where the gene expression in neuropeptides and molecular receptors is increased. The trophic factors stimulate the formation of nerve fiber, thereby changing the morphology of sensory neurons. Similar mechanisms underlie the chronic itch and chronic pain (11).

Interleukin 2 has a proven role in inducing pruritus. It has been shown that direct injection of this cytokine in healthy subjects, as well as in those with atopic dermatitis led to an itchy sensation. It was also found that the concentration is higher in patients with pruritic

lesions than in those without such lesions. Therefore, therapeutic measures which inhibit IL-2 (PUVA therapy, tacrolimus, thalidomide) are effective in treating pruritus which is nonresponsive to conventional treatments. (12)

In a study of histamine-induced pruritus, the mental trauma has enhanced the itching sensation and its duration. The duration of pruritus was reported to be higher in depressed subjects during exposure to stress (Fjellner and Arnetz, 1985, Fjellner et al. 1985). Another study on pruritus in psoriasis, atopic dermatitis and chronic idiopathic urticaria showed a correlation between the severity of pruritus and the intensity of depressive symptoms (Gupta et al. 1994). (13)

In stress, the raised levels of some neuromediators-B endorphins exacerbate the skin lesions. In practice, every dermatologist experienced associations between external stressors that induced cutaneous symptoms, hard to fit into a specific cutaneous pathology and, therefore, making it difficult to choose an effective therapeutic conduct.

Opioids modulate the itching sensation, both peripherally and centrally. The stimulation of the mu opioid receptors exacerbates itching, while the stimulation of the kappa receptors and the obstruction of mu receptors suppress the itching. (14)

Some studies suggest that ordinary hyperhidrosis of the palms and soles is increased due to stress and has no connection with chronic anxiety. (15)

Psychogenic pruritus vs. non-psychogenic pruritus

Radmanesh & Shafiei revealed the features that differentiate the psycho-pruritic disorders from the pruritic ones: the episodes are chronic and recurrent with short, intense and uncontrollable itching phenomena for a period varying from a few hours to several days.

There may be encountered feelings of pleasure during the scratching and satisfaction when the itching is over; the itching sensation in neurotic excoriation (NE) and psychogenic pruritus may or may not be found in the behaviour, which shows that the onset of pruritus in any segment of the body can lead to itching throughout the body; the pruritic sequences can be bizarre from the onset to the end: they can begin and end abruptly; the pruritic episodes are more frequent while resting or sleeping; the self-inflicted injuries, such as excoriations and scratches, with subsequent bleeding and crusting are common in chronic lichen simplex, neurotic excoriations and nodular prurigo; the patients have a poor response to any known antipruritic agents; the patients may be introverted and can present a recent history of psycho-emotional stress. (3)

Neither psychogenic pruritus nor organic itching can be found in a pure form, often these types of pruritus coexist. The interaction between chronic and psychic itching is complex, but it can be summarized in three main groups:

- pruritic diseases with psychiatric sequelae (endogenous eczema, nodular prurigo, chronic lichen simplex, psoriasis, dermatitis herpetiformis, Darier disease, pruritic epidermolysis bullosa, metabolic-uremic pruritus, chronic liver diseases, hyperthyroidism, pruritus in menopause, HIV, parasites, malignancies – lymphoma, polycythemia rubra vera – peripheral neuropathy, multiple sclerosis);
- pruritus worsened by psychosocial factors (eczema, nodular prurigo, chronic urticaria, pruritus in the genital region, senile pruritus);
- psychogenic disorders causing pruritus (itchy somatoform disorder/functional disorder, dermatitis factitus, impulse control disorder, neurotic excoriation, psychosis-illusion of

parasites, schizophrenia with tactile hallucinations). (6)

The diagnosis of psychogenic pruritus is determined after eliminating any other causes of the disorder; although it is difficult and requires a thorough corroboration between clinical and paraclinical elements, one can not label a patient as having a mental illness which triggers the itching sensation, because it produces a negative psycho-emotional impact on the person and would further enhance his suffering. Indeed, in the history of such a patient there can be found various disorders, conflicts, aberrant behavior etc. Therefore, psychogenic pruritus remains a diagnosis of exclusion, established after excluding the other forms of pruritus.

What distinguishes it from the other forms of pruritus is the fact that after research, there is not revealed any systemic or cutaneous cause that could induce it and that its intensity is directly correlated with the magnitude of some neuropsychological conditions. The patients describe the symptoms by exaggerating, mentioning unusual locations or strange triggering factors. The scratch marks are disproportionate to the skin features, often leading to pathomimesis. (16)

The quality of life and therapeutic conduct

In practice, it is noticeable that the negative impact created by the patient's awareness of his skin symptoms, expressed by itching, scratching lesions, and, sometimes, quite severe marks, has its starting point in the psychic area. His quality of life is negatively influenced, causing him great discomfort in interpersonal relationships and even with his own family. He feels isolated, pitied and, eventually, he is led towards introversion, all these experiences further enhancing the skin lesions that he has.

The patients' education and especially the one of their family members regarding the

interaction between skin disease, mind and body, as well as the information about the medical or non-pharmacological treatment, represents the key to successfully monitoring and diagnosing the patients. Learning about the effects of drugs, even the secondary ones, their dose and interaction with other drugs are also important. With respect to non-pharmacological ways of treatment, the patient's education in accessible terms is also the key. Therefore, the compliance is optimal when the patient and his family are well informed, when they are monitored either by phone or by regular check-ups, all of these motivating the patient and his family. (4)

Based on Fried's proposals regarding the therapeutic approach of dermatological diseases with psychosomatic determinism, the conduct is organized on three levels: lesionally, in which conventional dermatological therapy is used, emotionally, based on doctor-patient cooperation, providing emotional support, empathic and cognitive which aims at removing erroneous beliefs about causes and infectiousness. (5)

The optimal treatment is the etiologic one, by eliminating as much as possible the triggering factors/condition. When the cause is undetected, a local symptomatic treatment must be administered, which aims at administration of antihistamines (especially anti-H1), nonspecific desensitization, local applications of corticosteroid. (2)

The psychotropic medication used includes antidepressants, antipsychotics and anxiolytics, activating on the skin level by inhibiting the protein kinase C, which catalyzes the phosphorylation of cutaneous protein substrates. Not long ago, mirtazepine – both a noradrenergic and serotonergic antidepressant has been promoted for intractable itching, including the itching in the skin lymphoma with B cells. (2)

The remission of pruritus was also induced through PUVA therapy (photochemotherapy with UV type A), method whose mechanism of action is the inhibition of DNA through the formation of stable links between pyrimidine bases and through reducing the number of epidermal cells, Langerhans type, resulting in a decrease of inflammatory cells.

Whatever the nature of pruritus, for an effective monitoring and therapeutic approach, interdisciplinary collaborations between dermatologists, psychiatrists, internists and psychologists are required in order to help the patients and their families.

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